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DEVELOPMENT OF SOVIET WORK ON AUTOMATICS AND TELEMECHANICS

B. I. Domanskiy

A marked interest in automatics and telemechanics and their potentialities began to develop in the USSR in the early 1920's. A number of scientific research institutes (All-Union Electrical Engineering Institute, Central Laboratory or Wire Communications, Central Institute for Labor Protection, Departmental Laboratory of Measurements, and others) began work on automatic, telemechanical, and telemetering devices. A Division of Automatics and Relay Construction was founded in the Khar'kov Electromechanical Plant. The All-Union Electrical Engineering Institute, the All-Union Thermal-Engineering Institute, the Central Boiler and Turbine Institute, and the Ukrainian Scientific Research Institute of Power Engineering began work on the automatic control of boilers.

In 1926, a number of electric power systems began the introduction of dispatcher points and, concurrently, took an active interest in problems of remote control, telemetering, and automatization. Systems of dispatcher control were developed at plants and in technical societies and by the beginning of the Second Five-Year Plan, the organization of a number of institutions on automatics and telemechanics became possible.

In 1932, a special group which had been working under the direction of Academician A. A. Chernyshev was released from the Physicotechnical Scientific Research Institute and the Scientific Research Institute of Telemechanics was formed.

Because of the lively interest displayed in problems of automatics and telemechanics and the great volume of research and development in progress, the All-Union Council of Scientific and Technical Societies in April 1932 established an organizational committee whose chairman was Academician G. M. Krzhizhanovskiy to call All-Union conferences for the separate branches of industry. By March 1934,

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14 of these conferences had been held and the discussions showed that many different automatic devices were being introduced in the local areas and that a clear need existed for the establishment of a higher scientific center to coordinate work in the field of automatics and telemechanics.

The KTA (Commission of Telemechanics and Automatics) was established by decree of the Presidium of the Academy of Sciences in June 1934. The chairman was Academician A. A. Chernyshev. The KTA conducted its work in 18 sections and, at the end of its first year, it collaborated with Gosplan in calling the First All-Union Conference on Automatics and Telemechanics. The work of this conference heightened interest in automatics and telemechanics, and divisions specializing in this field were established at a number of plants.

In 1936, the Commission on Telemechanics and Automatics began to publish the special periodical Avtomatika i Telemekhanika. Following reorganization in 1937, the KTA in July 1938 was reestablished as the Committee on Automatization under the Presidium of the Academy of Sciences. Early in 1939, the latter was reorganized into the IAT (Institute of Automatics and Telemechanics) of the Academy of Sciences USSR.

Along with being the only country in the world in which there is a scientific institution whose activity is devoted exclusively to the development of scientific problems in the field of automatics and telemechanics, the Soviet Union has pioneered the organization of higher education in automatics and telemechanics.

Under the direction of B. I. Domanskiy, a chair and specialty of automatics and telemechanics were established in the Leningrad Electromechanical Institute (now the Leningrad Polytechnic Institute) in the 1933 - 1934 school year. At approximately the same time, similar chairs and specialties were established in the Leningrad Electrical Engineering Institute under the direction of B. I. Domanskiy, Professor M. L. Tsukkerman and in the Moscow Power Engineering Institute under the direction of M. A. Gavrilov initially and G. M. Zhdanov later.

Special training in the field of automatics and telemechanics in several other educational institutions was begun simultaneously under the direction of V. I. Kovalenkov, Corresponding Member of the Academy of Sciences USSR, Professor V. K. Popov, and Professor N. A. Livshits. At present, special training in automatics and telemechanics is offered in more than ten higher educational institutions of the USSR.

The development of scientific research and higher education in automatics and telemechanics is only a part of the broad general plan for automatization and telemechanization of the economy. Great progress has been made in the combination of the new automatic electrical and electronic systems with automatic mechanical systems and in the development of the theory of automatic machines.

Especially noteworthy is the work of the Institute of Machine Studies, Academy of Sciences USSR, where research on the analysis and synthesis of automatic machines is conducted under the direction of Academician I. I. Artobolevskiy. Here also, Academician N. G. Bruyevich directs work on the accuracy of mechanisms and the development of digital computers and mathematical instruments.

The creation of unique scientific schools of thought on the theory of automatic regulation in Moscow, Leningrad, Gor'kiy, and Kiev is another outstanding achievement. Groups of outstanding scientists, headed by Academician A. A. Andronov, Academician V. S. Kulebakin, and S. A. Lebedev, Corresponding Member of the Academy of Sciences Ukrainian SSR, are conducting research in the Academy of Sciences and in a number of scientific research institutes. A very important school, headed by Professor Ye. L. Nikolai and I. N. Voznesenskiy, Corresponding Member of the Academy of Sciences USSR, has been established in Leningrad. This school includes a number of important plant workers and is noted for the practical trend of its work.

The outstanding workers in developments in the telemechanics field are Academicians A. I. Berg, V. F. Mitkevich, and A. A. Chernyshev, V. I. Kovalenkov, and Professor A. F. Shorin, outstanding inventor and scientist. These persons have trained a number of outstanding workers in the fields of remote control, telemetering, and special devices for automatic control.

M. P. Kostenko, Corresponding Member of the Academy of Sciences USSR, and A. G. Iosif'yan, Corresponding Member of the Academy of Sciences Armenian SSR, are the outstanding personalities in the development of systems of synchronous coupling.

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